

United States General Accounting Office

GAO

Briefing Report to Congressional
Requesters

October 1986

NONCASH BENEFITS

Initial Results Show
Valuation Methods
Differentially Affect
the Poor





United States
General Accounting Office
Washington, D.C. 20548

Program Evaluation and
Methodology Division

B-222373

October 24, 1986

The Honorable William D. Ford
Chairman, Committee on Post Office
and Civil Service
House of Representatives

The Honorable Robert Garcia
Chairman, Subcommittee on Census
and Population
Committee on Post Office and Civil
Service
House of Representatives

The Honorable James V. Hansen
Ranking Minority Member
Subcommittee on Census and
Population
Committee on Post Office and Civil
Service
House of Representatives

Increasingly, the poor are receiving federal assistance through the provision of more goods and services rather than more cash. In response to this situation, the Congress urged the Bureau of the Census to develop methods for placing a cash value on in-kind benefits such as food stamps. In 1982, the Bureau presented three methods as alternatives to the official cash income-only method.

Depending upon the valuation method used, adding these "cashed-out" benefits to the current cash-only data can reduce the reported poverty rate notably. In 1984, for example, the Bureau noted reductions in the poverty rate from 14.4 percent, using the official cash-only method, to between 9.7 percent and 13.2 percent, using the alternative techniques. That is, depending on the method used, between 2.8 million and 11.1 million fewer people were identified as poor when the in-kind benefits were cashed out. At issue is the extent to which these changed figures accurately represent an increase in the well-being of the poor (which would be a desirable improvement in how poverty data are reported) or are artifacts of

the methodology and do not reflect a real change in the poverty rate.

In response to your request of March 18, 1985 (the letter is in appendix I), we have been working on a method for evaluating the likely effects of proposed changes to the official definition of poverty. As we indicated in our testimony of October 31, 1985, and April 18, 1986, we are addressing two questions that pertain to your request as well as the three alternative methods proposed by the Bureau (and described in appendix II) for the purpose of measuring poverty: (1) do conceptual, operational, or computational aspects of the methods distort the estimates of poverty that are derived from them? and (2) if there are such factors, how big is their influence on the poverty estimates? This briefing report responds to your September 10, 1986, request for preliminary empirical findings on the influence of selected conceptual and technical issues on poverty statistics.

The empirical analysis we have done to date on selected aspects of the Bureau's three proposed poverty-measurement methods shows that poverty estimates do reflect artifacts of the method used (that is, the methods do affect poverty estimates). First, conceptual choices such as what is included in the income definition can not only reclassify millions of persons as "no longer in poverty" but can also alter the reported distribution of income among the poor. Second, our empirical analyses show that technical choices (some of which appear to be methodological errors or artifacts) associated with the valuation methods can also result in the reclassification of millions of persons. Third, our empirical results identify particular subgroups of the population whose poverty status is differentially affected by these conceptual and technical matters: most strikingly, households headed by single women.

We organized our work around three questions: (1) To what extent do changes in poverty estimates result from conceptual choices such as what to include as income? (2) To what extent do changes in poverty estimates result from technical decisions such as whether and how to adjust for misreporting benefits? and (3) Are specific subgroups differentially affected by these conceptual and technical choices? To answer these questions, we first re-examined our 66 previously identified concerns (GAO/PEMD-86-8BR), developed 22 issues through clustering, and assessed the influence of 6 issues. These 6 were selected

because it was feasible to quantify their effects and also because they represent important concerns raised in discussions such as those at the Bureau's December 1985 conference on the measurement of noncash benefits. Further, as you requested, we paid particular attention to concerns about valuing medical care benefits (that is, Medicare and Medicaid).

We then reanalyzed the Bureau's 1985 noncash benefit data from the annual March supplement to the Current Population Survey (CPS) and performed new analyses using data from the Food Stamp Program of the U.S. Department of Agriculture (USDA), the 1979 longitudinal survey of the Income Survey Development Program (ISDP), and detailed medical administrative data from the Health Care Finance Administration (HCFA) for 1982 in the four states where the data were available. These analyses included the development of alternative ways of treating each of the issues addressed. (A full description of our alternative methods is in appendix III). A comparison of the results of these alternative choices with each other, with the results of the Bureau's proposed methods and with the currently used cash-only method formed the basis for determining the influence of each conceptual and technical issue on estimates of poverty. Our results provide poverty statistics at a national level as well as for the four states where complete medical data were available. Additionally, for illustrative purposes only, we provide projected national poverty statistics based on the results from the four states.

With respect to question 1 on the influence of conceptual choices, we successfully replicated and extended the Bureau's procedures showing that nationally between 1.2 and 11.1 million persons were reclassified as no longer in poverty using 1984 data, depending on which income definition and noncash-benefit valuation method was chosen. Closer inspection of the changes resulting from the use of alternative techniques showed that relative to the recipient and poverty budget share methods, adding the market value for medical benefits to food and housing benefits markedly altered the resulting income distribution. Specifically, when medical benefits were added to food and housing benefits under the recipient value and poverty budget share methods, persons with incomes just below the poverty line were moved just over the line, but under the market value method, persons with incomes well below the poverty line (before the inclusion of medical

benefits) were moved up to, over, and, in some cases, well over the poverty line. That is, the market value method catapulted them out of poverty.

As we have reported in previous testimony, there is good reason to believe that some proportion of the change in the poverty rate stems from real differences associated with the choice of the valuation method and income definition combinations. However, the pattern of changes found under the market value method suggests that other factors such as technical problems (for example, methodological artifacts) may also be at work.

With regard to the influence of technical concerns, question 2, we found that each of the issues we examined influences the poverty rate. The first issue we addressed concerned the influence of not taking into account the fact that medical benefits cannot be shared across family members. Our alternative estimates of the 1984 poverty rates across four states where data were available show that the Bureau's market value method yields a poverty rate that is too low by 0.2 to 1.8 percentage points. That is, in California, Georgia, Michigan, and Tennessee alone, between roughly 120,000 and 850,000 individuals would be inappropriately shown as not poor simply because the Bureau's procedures allocate the medical benefits of enrollees to the entire family, regardless of the fact that all family members are not actually covered by the transfer. If these same differences were found at the national level, between roughly 600,000 and 4.4 million individuals would be inappropriately shown as not poor.

The second technical issue that we examined concerns the basis for calculating and assigning the market value for Medicare and Medicaid. Whereas the Bureau determines the market value of Medicaid based on the average amount a recipient receives and then assigns this value to all enrolled individuals, two alternative calculational procedures show that under the Bureau's method, the poverty rate is 0.4 to 0.7 percentage points too low. In the four states where data were available, these changes mean that between nearly 195,000 and 330,000 individuals would be inappropriately shown as moved out of poverty because of the way that benefit values are assigned. If this same difference were found at the national level, between roughly 1.0 million and 1.7 million individuals would be inappropriately shown as not poor.

The third technical issue we examined concerned the way in which medical benefits are computed. Specifically, the Bureau currently calculates an average benefit level and imputes this to individuals enrolled in the programs. Since the distribution of medical benefits includes many low benefit values relative to a small proportion of very large benefit values, the average is not necessarily an appropriate way of summarizing the value of benefits. Using data from the four states for which they were available, our analyses show that under alternative calculational procedures for Medicare only, the Bureau's poverty rate is too low by between 0.5 and 0.9 percentage points, affecting between roughly 215,000 to 390,000 individuals in the four states alone. If this same difference were found at the national level, between nearly 1.0 million and 1.8 million individuals would be inappropriately shown as not poor, depending upon which computational procedure is used to value Medicare. It is not unreasonable to expect that if the alternative values for Medicaid were added to these for Medicare, an even greater artifactual change to the overall poverty rate would result.

Our fourth technical issue--misreporting food stamp reciprocity and amounts--deals with correcting the Bureau's market value method for estimating poverty under an income definition that includes the value of food and housing benefits. Using Food Stamp Program data from USDA, CPS data, and data from an independent estimate of food stamp reciprocity and amounts, we developed a correction for the misreporting of food stamps. This analysis showed that the Bureau's market value method underestimates poverty by using an income definition that includes food and housing benefits uncorrected for misreporting food stamp reciprocity and amounts. That is, correcting for errors in reporting whether an individual receives food stamps or not and the amounts received reveals a national poverty rate that is 0.6 percent lower than the uncorrected rate reported by the Bureau. Nationally, this means that over 1.4 million individuals may have been inappropriately shown as poor.

With respect to question 3 on the differential effects of conceptual and technical choices on specific subgroups, we found that some subgroups are affected by more of the conceptual and technical aspects than others. Households headed by single women were affected by 4 of the 6 issues we examined while persons in married couple families were not

affected by any of them. Further, we found that with the exception of the adjustment for misreporting program reciprocity and amounts, which affected all subgroups similarly, each of the conceptual and technical aspects we examined in these analyses noticeably affected at least one subgroup in the population.

These findings are preliminary. The issues examined in this preliminary report are not, of course, the full array of those raised. In addition, alternatives other than those we tested could be examined. However, we believe these analyses illustrate that it is possible to test empirically what the effect of the conceptual and technical choices may be and the value of having such information in interpreting results of the proposed methods for cashing out in-kind benefits.

Oral comments were received from an official at the Bureau and incorporated into the body of the text. In general, this official said that the study was helpful and that the Bureau welcomed an external review of its proposed methods. In particular, the official noted that misreporting food stamp reciprocity and amounts, whose influence we analyzed, represented a general problem that could be usefully examined for other noncash income components.

The principal recipients of this report are the members of the House Committee on Post Office and Civil Service and Subcommittee on Census and Population. Copies of this report will also be made available to those who request them. As we agreed with your office, the distribution of this report has been restricted for 7 days. If you would like any additional information, please call me at 202-275-1854 or Dr. Lois-ellin Datta at 202-275-1370.


Eleanor Chelimsky
Director

C o n t e n t s

	<u>Page</u>
 BRIEFING REPORT	
Background	9
To what extent do changes in poverty estimates result from individual conceptual choices?	11
To what extent do changes in poverty estimates result from selected technical decisions?	17
Are specific subgroups differentially affected by these conceptual and technical choices?	24
Summary	26
 APPENDIX	
I Request letter	27
II Bureau of the Census explanation of the market value, recipient value, and poverty budget share methods	29
III Technical description of alternative computations for each issue	31
 TABLE	
III.1 Methods for calculating and assigning Medicare and Medicaid values	35
III.2 Individual level distribution of Medicare reimbursements to California aged in 1982	37
III.3 Estimates of the number of persons receiving food stamps by duration of receipt in 1984	39
 FIGURE	
1 Percentage of persons in poverty and millions moved out in 1984 by valuation method and income measure	12
2 1984 poverty gaps before and after the inclusion of medical benefits in the recipient value method	14

FIGURE

Page

3	1984 poverty gaps before and after the inclusion of medical benefits in the market value method	16
4	The use of the market value method with four approaches for estimating the effect of nonsharable medical benefits: Percentage of persons in poverty and millions moved out in 1984	18
5	The use of the market value method with three approaches for assigning medical benefit values: Percentage of persons in poverty and millions moved out in 1984	20
6	The use of the market value method with five approaches for calculating Medicare benefits: Percentage of persons in poverty and millions moved out in 1982	21
7	The use of the market value method with current and corrected approaches for adjusting for the misreporting of Food Stamp recipients and amounts: Percentage of persons in poverty and millions moved out in 1984	23
8	Change in poverty rates for selected conceptual and technical issues by population subgroups	25

ABBREVIATIONS

CPS	Current Population Survey
GAO	General Accounting Office
HCFA	Health Care Finance Administration
ISDP	Income Survey Development Program
SMI	Supplemental Medical Insurance
USDA	U.S. Department of Agriculture

BRIEFING REPORT

BACKGROUND

In March 1985, the leadership of the House Committee on Post Office and Civil Service and the House Subcommittee on Census and Population asked us to examine proposed changes to the official poverty indicators, which currently are based on cash income alone. Our examination was to include a review of the methods used in the past to assess changes in the indicators, in-depth analysis of technical aspects of alternative ways to value noncash benefits, the identification of what is important in reviewing proposed new indicators, and the development of an evaluation method for assessing future changes to this significant national statistic. (See appendix I.) This briefing report responds to a request for our preliminary findings on technical aspects of alternative ways to value noncash benefits.

The alternative ways to value noncash benefits that we examined were developed by the Bureau of the Census at the urging of the U.S. Senate. As the provision of in-kind benefits such as food stamps formed an increasing part of total federal support for the poor, the Congress recognized the need to represent this support in the official poverty rates. Since there was no generally agreed-upon way of quantifying the cash value of noncash benefits, the Bureau developed three alternative experimental valuation methods: the market value method, recipient value method, and poverty budget share method. These were first reported in 1982, and poverty rates based on them have been published regularly since then in a series of technical reports, in addition to rates based on the cash income-only method.

The market value method considers the value of noncash benefits to be equal in cash to what it would cost to buy the same goods and services in the private market. The recipient value method employs the concept of the beneficiary's own valuation of benefits: the equivalent of a noncash benefit is the cash the individual would trade for it. The poverty budget share method limits benefit values to the observed consumption levels of people near the poverty line. (A more detailed explanation of these methods is in appendix II.)

Adding the cashed-out benefits to the official cash-income-only data with no adjustment to the poverty thresholds can reduce the reported poverty rates notably. At issue is the extent to which these changes represent real improvements in the well-being of the poor (which would be a desirable improvement over current reporting methods) or artifacts of the techniques used in cashing out benefits that would not reflect real changes in poverty rates.

As we have previously testified (October 31, 1985, and April 18, 1986), there is reason for concern about such artifacts. In

the Bureau's first publication reporting new estimates of poverty when noncash benefits are cashed out (Estimates of Poverty Including the Value of Noncash Benefits, technical paper 50 (Washington, D.C.: U.S. Government Printing Office, 1982)), it emphasized the experimental nature of these estimates, pointing out the strengths, limitations, and uncertainties of its procedures. Other analysts have also identified concerns with the Bureau's methods, many of which were expressed at the Bureau's conference on the measurement of noncash benefits (see GAO/PEMD-86-8BR and the conference proceedings). However, to date, very few direct and independent empirical tests have been made of whether the concerns raised do affect the poverty rates and, if so, to what extent. The analyses reported here are, thus, among the first to provide empirical estimates.

In response to the committee's request for in-depth analysis and identification of what is important in reviewing proposed new indicators, we have addressed three general questions:

1. To what extent do changes in poverty estimates result from individual conceptual choices?
2. To what extent do changes in poverty estimates result from selected technical decisions?
3. Are specific subgroups differentially affected by these conceptual and technical choices?

In order to answer these questions we first clustered the 66 conceptual, operational, and computational concerns identified in our earlier work (GAO/PEMD-86-8BR) into 22 generic issue areas; 6 are conceptual and the remaining others are technical. We then chose 6 of these generic issue areas for empirical examination; 2 are conceptual and 4 are technical. These 6 issues (which account for 16 of our 66 concerns or roughly one quarter of the total) were selected because it was feasible to quantify their effects and because of their prominence in the current debates on poverty measurement and the committee's interest in issues related to cashing out health benefits such as Medicare and Medicaid. It should be noted, however, that these analyses address only a sample of the universe of issues relating to the measurement of poverty, and no attempt to aggregate the findings has been made at this time.

The two conceptual issues we examined are

1. the choice of what is included in the income definition and
2. the choice of how noncash components of the income definition are valued.

The four technical issues we examined are related to the

1. nonsharability of medical benefits,
2. calculation and assignment of medical benefit values using different groups,
3. assignment of average medical expenditures to program enrollees, and
4. adjustment of income for misreporting of food stamp reciprocity and amounts.

Our analyses involved first replicating the Bureau's poverty measurement procedures and then empirically assessing the selected 6 issues using four data sources: the 1983 and 1985 annual March supplements to CPS from the Bureau, the 1982 HCFA detailed administrative medical data for all states for which they were available (California, Georgia, Michigan, and Tennessee), the 1984 Food Stamp Program data from USDA, and the food stamp participation data from the 1979 longitudinal survey of the Income Survey Development Program.

For each of the technical issues examined, we developed alternative procedures that test the effects of potential problems with the Bureau's methods. (See appendix III for further information on the nature and computation of these alternative techniques.) Differences between the Bureau's proposed methods and our techniques were used as evidence of the direction and size of the effect of the issue on poverty rates. We provide poverty statistics for the nation as well as for the four states where complete data were available. Additionally, for illustrative purposes only, we provide projected poverty statistics for the nation based on data from the four states.

TO WHAT EXTENT DO CHANGES IN POVERTY ESTIMATES RESULT FROM INDIVIDUAL CONCEPTUAL CHOICES?

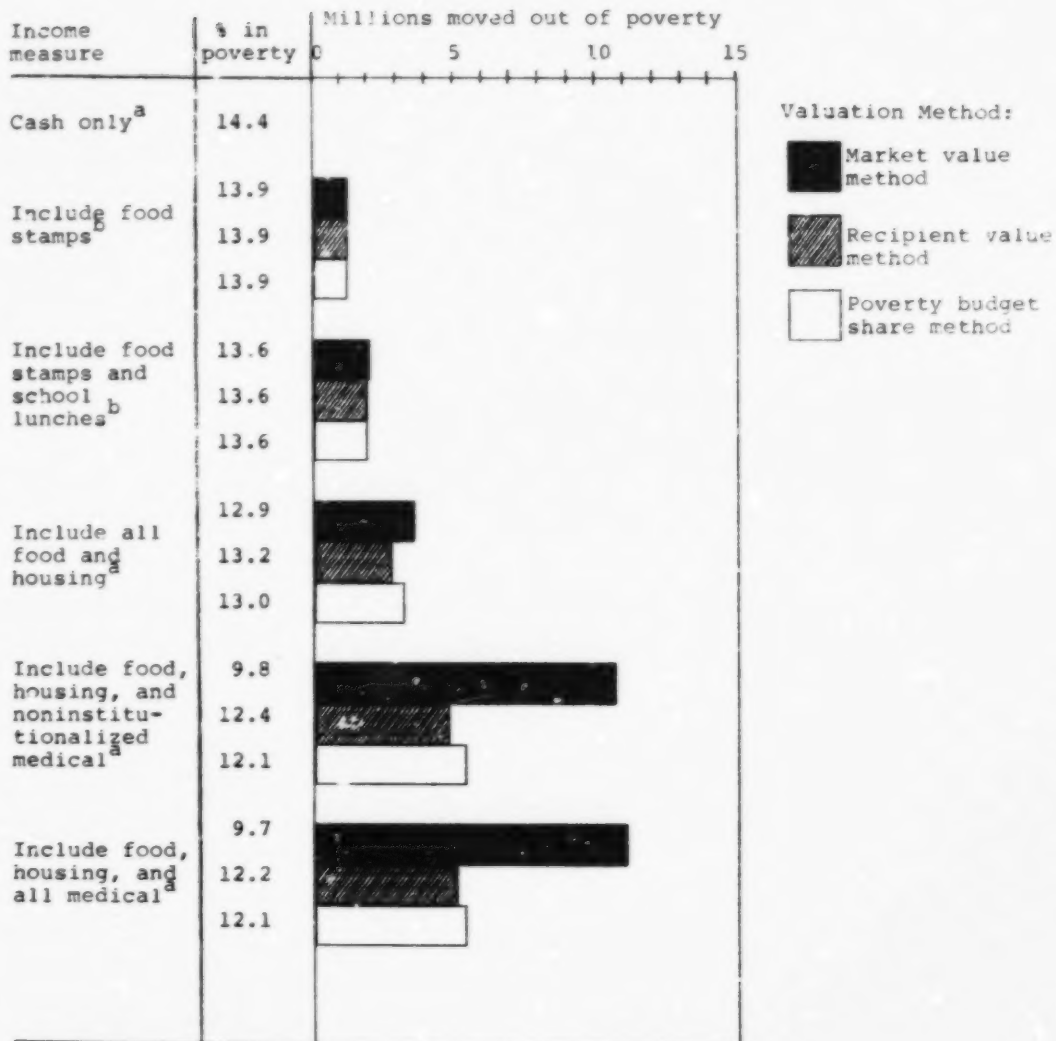
We examined two issues relating to conceptual choices: what is included in the definition of income and how noncash components of income are valued.

What is included in the definition of income

All three valuation methods can include the same components of noncash income. Therefore, we first examined what difference, if any, including components such as food stamps, school lunches, housing, and health care made on two outcomes. The outcomes we examined were the poverty rates and the numbers of persons no longer classified as poor.

As the data indicate in figure 1 on the next page, in all three methods, not surprisingly, the addition of the value for any noncash benefit results in a decrease in the reported poverty rate. Depending on what noncash benefits are included, between

Figure 1: Percentage of Persons in Poverty and Millions Moved Out in 1984 by Valuation Method and Income Measure



^aCalculation performed by the Census Bureau.

^bCalculation performed by the General Accounting Office.

1.2 and 11.1 million persons are reclassified as no longer in poverty.

With regard to the relative effect of different benefits, adding the values for food stamps, school lunches, and housing (as the Bureau has shown), regardless of method, has a moderate effect on the poverty rate and on the reclassification of persons as no longer poor. Across all three methods, for example, including food stamps decreases the poverty rate from 14.4 percent under the official cash-only definition to 13.9 percent, reclassifying about 1.2 million persons as no longer poor.

However, the addition of medical benefit values as well to the income definition has a dramatic effect on the incomes of the poor and the resulting poverty rate. Adding these benefit values almost doubles the number of persons no longer classified as poor.

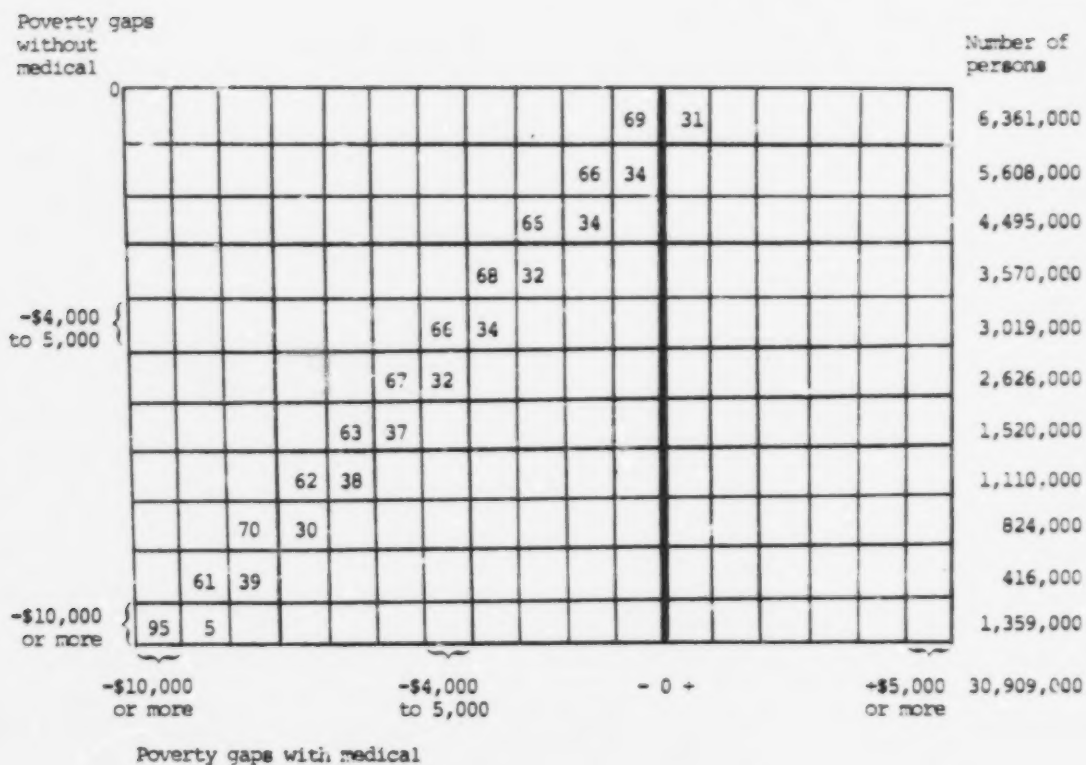
How noncash components of the poverty indicator are valued

As noted earlier, the three methods value the same component of noncash income differently. Our second examination was to determine what the consequences, if any, were for the different methods of valuing the same components. We looked at the same two types of outcomes--poverty rates and the number of persons no longer classified as poor. We then analyzed the income distribution of poor persons in relation to how close to (or far away from) the poverty line they were before and after the inclusion of medical benefits for the three valuation methods.

With regard to poverty rates, as figure 1 shows, the effect of the method of valuation depends on what component is included. The three methods yield similar results when the values for food stamps alone and food stamps plus school lunches are added to cash income. The results differ slightly when the values for all food and housing benefits are added to cash income. When, however, the value for medical benefits is added to cash income plus the values for all food and housing benefits, the market value method yields strikingly different results from the recipient value and poverty budget share methods. Under the market value method, the poverty rate drops from the official cash-only rate of 14.4 percent to 9.7 percent, and nearly 11.1 million persons are no longer classified as poor. For the recipient value method, the rate drops from 14.4 percent to 12.2 percent, and nearly 5.1 million persons are reclassified as no longer poor; for the poverty budget share method, the rate drops to 12.1 percent, and about 5.4 million persons are reported as no longer poor.

In terms of our second measure of effects--income distribution of the poor in relation to the poverty line--there are three ways in which the reported incomes of persons in

Figure 2: 1984 Poverty Gaps Before and After the Inclusion of Medical Benefits in the Recipient Value Method^a



^a Poverty gaps are the amount of income necessary to raise a person's income to the poverty threshold. Cell entries are percentages. Percentages may not add to 100 because of rounding.

poverty can change with respect to the poverty line, when noncash benefits are added:

1. Persons with incomes just below the poverty line can be moved just over the poverty line, with a small increase in income.
2. Persons with incomes below the poverty line can be moved closer to but not over the poverty line, with a possibly substantial increase in reported income.
3. Persons with incomes well below the poverty line can be moved over the poverty line, with a possibly enormous increase in reported income.

We compared changes in the income distributions of the poor before and after the inclusion of medical benefits for the three valuation methods. As figure 2 shows, when medical benefits are included in income using the recipient value method, most persons had increases in reported income of less than \$1,000 across all levels of poverty. That is, of all the persons who before the inclusion of medical benefits had incomes of \$9,000 to \$10,000 below the poverty line, about 61 percent also had incomes reported as \$9,000 to \$10,000 below the poverty line after the value of medical benefits were added, while about 39 percent now had reported incomes of \$8,000 to \$9,000 below the poverty line. At the other end of the scale, of all the persons whose incomes before the inclusion of medical benefits were less than \$1,000 below the poverty line, about 69 percent were still shown as below the line after the addition of medical benefit values, while 31 percent were shown as above the line. Thus, across the distribution of cash incomes including the value of food and housing benefits, the dispersion of shifts toward the poverty line was, in general, relatively small (less than \$1,000) and was consistent: about the same for those close to the line and those far below it. A similar pattern was found for the poverty budget shares method.

However, when medical benefits are added to income using the market value method, as figure 3 on the next page shows, many persons were "catapulted out of poverty." That is, for this method, not only were many persons moved out of poverty but also many were suddenly moved well out of poverty, going from \$1,000 below the poverty line before the inclusion of medical benefits to \$5,000 or more above it after including medical benefits. Some even went from being \$7,000 to \$8,000 below the poverty line before adding medical benefits to being reported as \$5,000 or more above it, after these benefits were included in the income definition. Additionally, many of those who were not moved over the poverty threshold were placed substantially closer to the line and, thus, would be reported as being notably less eligible for means-tested benefits based on sliding scales in relation to poverty.

Figure 3: 1984 Poverty Gaps Before and After the Inclusion of Medical Benefits in the Market Value Method³

Poverty gaps without medical																	Number of persons	
-\$4,000 to 5,000	0										45	15	21	10	4	2	4	6,211,000
									42	16	22	12	4	1	1	2	5,443,000	
								47	14	22	10	3	2	1	1	2	4,416,000	
							45	13	19	15	4	1	1			1	3,499,000	
						51	11	18	13	4	1	1	1				2,945,000	
					55	11	14	9	7	2	1	2	1			1	2,546,000	
				52	9	19	10	6	1	1	1					1	1,442,000	
			49	6	18	10	8	2	1	2				1		2	1,098,000	
			56	3	16	9	6	6	3								837,000	
		65	3	10	9	3	3	6									380,000	
-\$10,000 or more	86	3	4	2	5	1											1,284,000	
	-\$10,000 or more				-\$4,000 to 5,000				- 0 +				+\$5,000 or more				30,103,000	
Poverty gaps with medical																		

³ Poverty gaps are the amount of income necessary to raise a person's income to the poverty threshold. Cell entries are percentages. Percentages may not add to 100 because of rounding.

We believe this indicates not only the effect of the market value technique but also the utility, in testing the effects of conceptual factors, of reporting as we have done on both income distribution and poverty rate changes.

TO WHAT EXTENT DO CHANGES IN POVERTY
ESTIMATES RESULT FROM SELECTED
TECHNICAL DECISIONS?

We examined the influence of four technical decisions: how the nonsharability of medical benefits is handled, the basis (in relation to enrollees and recipients) on which medical benefits are assigned, whether means (that is, arithmetic averages) or other measures of central tendency are used in computing medical benefits, and how misreporting food stamp reciprocity is handled. For each of these analyses, we first developed alternative ways of dealing with the technical issue that are consistent with directions indicated in technical debates. We then tested the difference these alternatives make in comparison to the method proposed by the Bureau in terms of poverty rates and persons reclassified as no longer in poverty. We report these analyses only for the market value method: our analyses indicated this method is the most sensitive to the addition of medical benefits, and it is often the only method reported in analyses of changes in poverty when noncash benefits are considered.

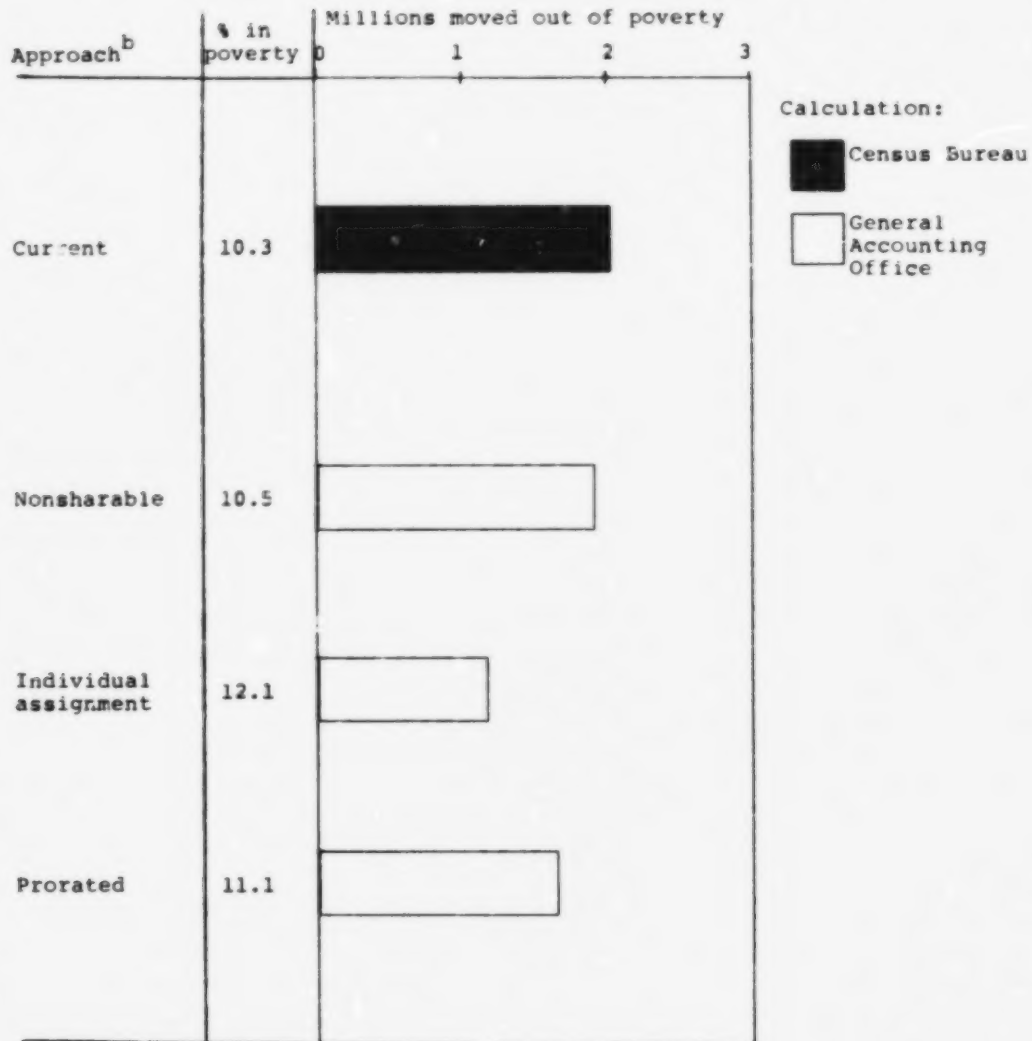
Nonsharability of medical benefits

The issue here is that medical benefits for which only one member of the family may be eligible are counted as benefiting all members of the family when poverty rates are reported. One example is that a grandparent's eligibility for Medicare may permit the grandparent to receive health care, but it has no direct effect on access to health care for other family members. A Bureau official noted that the grandparent's receipt of medical benefits may indirectly affect the family members through the reallocation of income that might have otherwise been devoted to medical care. Alternatively, persons may forgo medical services when resources are not available.

The Bureau's proposed market value approach shows the benefit as accruing to all family members living together as if it were sharable. We developed three alternative methods, which are described further in appendix III, all of which allocate the benefit only to the enrolled individual. The data we used for the analysis of effects come from four states.

As figure 4 on the next page indicates, under the Bureau's market value method, the poverty rate is 10.3 percent, and about 2.0 million persons would be reported as moved out of poverty in the four states. Using alternative methods that allocate a benefit only to the person receiving it shows that the percentage of persons reported as being in poverty would increase between

Figure 4: The Use of the Market Value Method With Four Approaches for Estimating the Effect of Nonsharable Medical Benefits: Percentage of Persons in Poverty and Millions Moved Out in 1984^a



^aData are for California, Georgia, Michigan, and Tennessee.

^bIncome measure includes food, housing, and noninstitutionalized medical care.

0.2 and 1.8 percentage points. That is, between nearly 120,000 and 850,000 fewer persons would be moved out of poverty in the four states. If the same change in the poverty rate were found at the national level, between roughly 600,000 and 4.4 million more persons would be reported as being in poverty, when our adjustment to the market value approach is used.

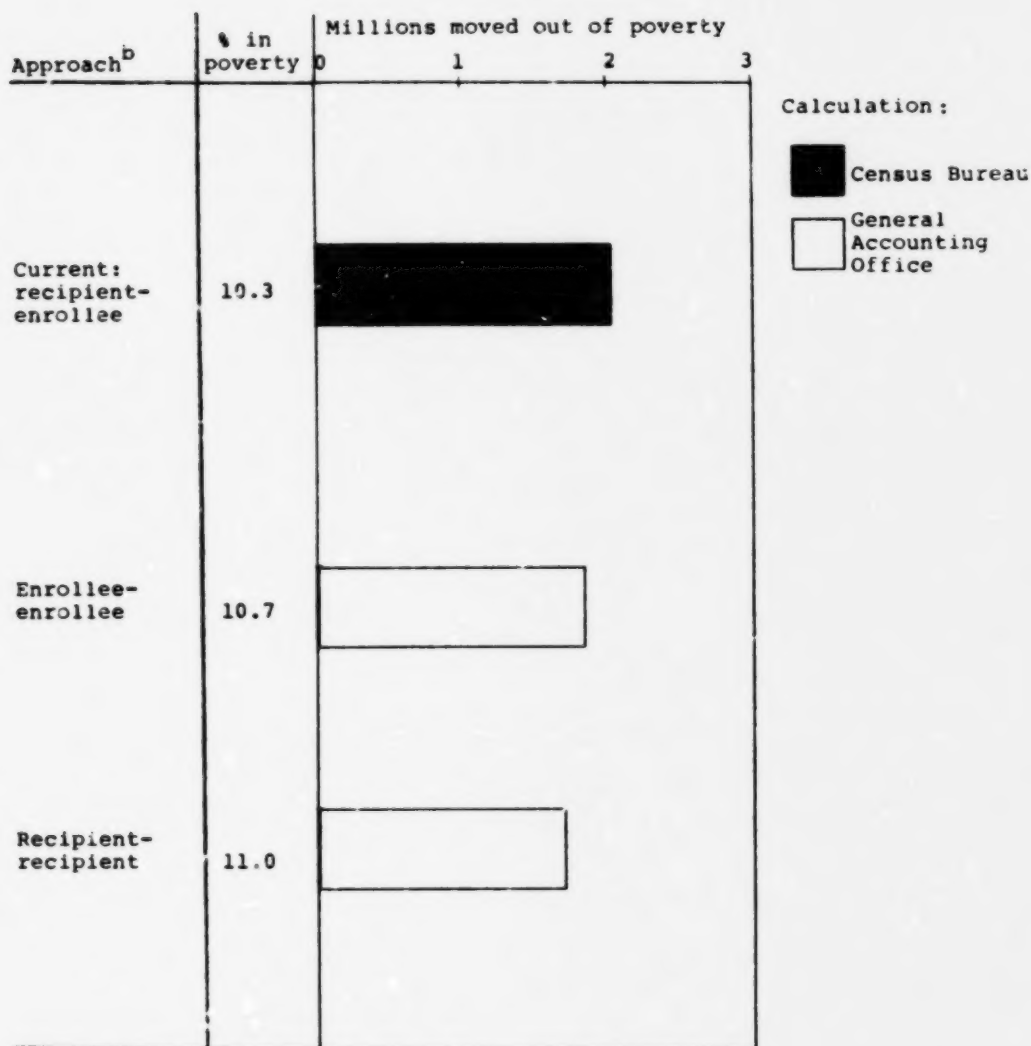
Calculation and assignment of benefit amounts based on enrollees and recipients

The second technical issue deals with the concern that the Bureau's market value method for calculating and assigning Medicaid benefit values to enrollees is based on information from recipients. That is, the incomes of individuals who were eligible for but did not receive any Medicaid service are being increased and the increase is based on the cost of service to those actually receiving health care through Medicaid. How this should be treated has been addressed in the poverty measurement debates, with some experts regarding the Bureau's method as conceptually appropriate and others disagreeing.

We developed two alternatives, based on the principle of comparability. The first alternative derives the costs for Medicare and Medicaid from all enrollees and applies them to all who are eligible. The second alternative bases the derivation of costs for Medicare and Medicaid on actual recipients and credits the value only to actual users of health care. (See appendix III for details of the calculation and assignment procedures.)

Under the Bureau's market value method, the poverty rate is 10.3 percent, and about 2.0 million persons are reported as moved out of poverty in the four states. Under our alternative calculation procedures, the poverty rate would be shown as increasing between 0.4 and 0.7 percentage points across the four states where Medicaid data were available. That is, between 195,000 and 330,000 fewer persons would have been reported as moved out of poverty in the four states, compared to the Bureau's calculations. If this same change to the poverty rate were found at the national level, between roughly 1.0 and 1.7 million fewer persons would have been reported as no longer poor. We show these data in figure 5.

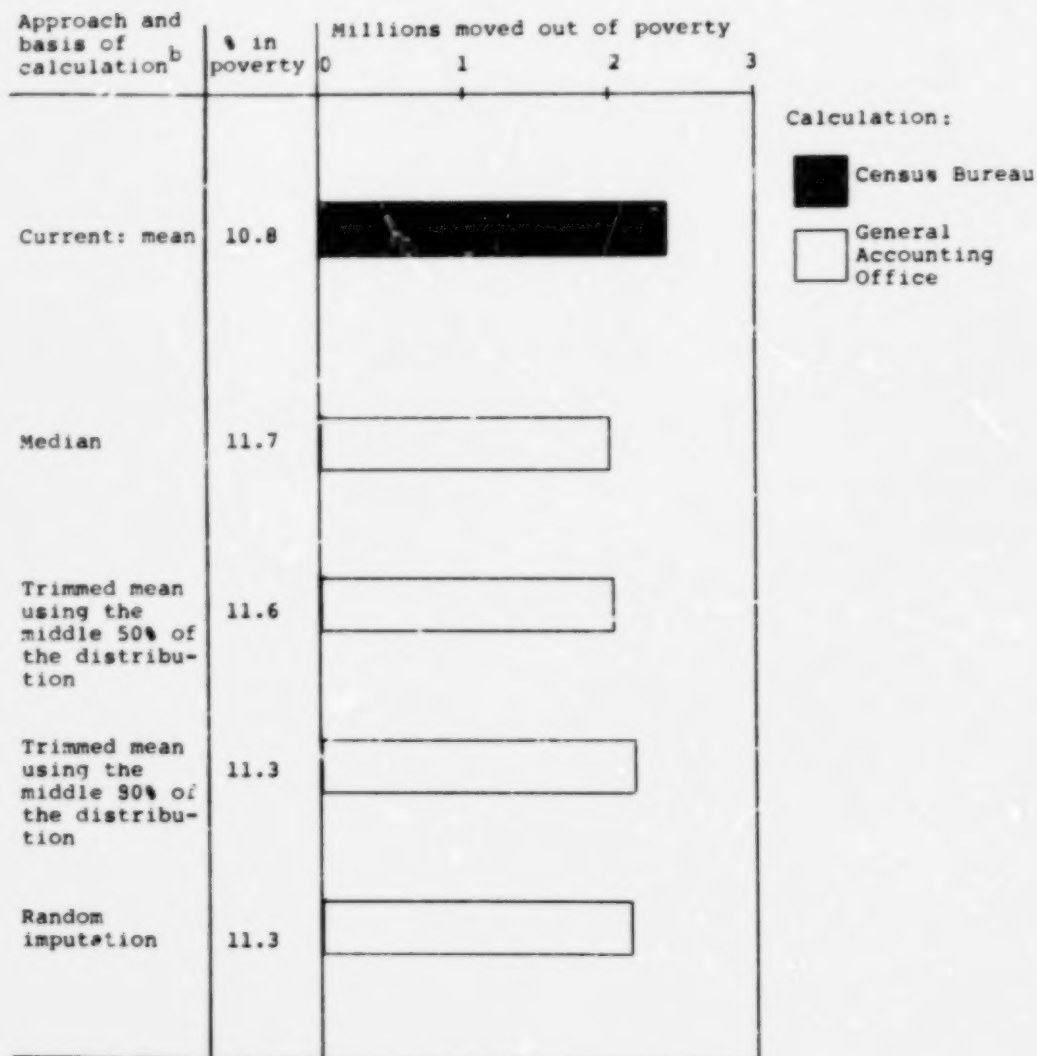
Figure 5: The Use of the Market Value Method With Three Approaches for Assigning Medical Benefit Values: Percentage of Persons in Poverty and Millions Moved Out in 1994^a



^aData are for California, Georgia, Michigan, and Tennessee.

^bIncome measure includes food, housing, and noninstitutionalized medical care.

Figure 6: The Use of the Market Value Method With Five Approaches for Calculating Medicare Benefits: Percentage of Persons in Poverty and Millions Moved Out in 1982^a



^aData are for California, Georgia, Michigan, and Tennessee.

^bIncome measure includes food, housing, and noninstitutionalized medical care. All values for Medicaid benefit are means.

Assigning average medical expenditures to enrollees

The issue here is the appropriateness of assigning, under the market value method, the average medical expenditure to those who are covered by Medicare or Medicaid or both, given the fact that the distribution of medical expenditures may be severely skewed. For example, in California, in 1982, about 5 percent of the aged population covered by Medicare received about 56 percent of the total payments for the aged.

The Bureau's market value method for calculating and assigning medical benefit values based on the mean value derived from the distribution of medical expenditures may be misleading for the purpose of measuring poverty because that distribution is skewed. We calculated four alternative summary statistics for Medicare only (see appendix III), all of which may better represent the distribution of Medicare expenditures for the purposes of estimating poverty rates. The data we used come from the four states for which the detailed medical data necessary for this analysis were available.

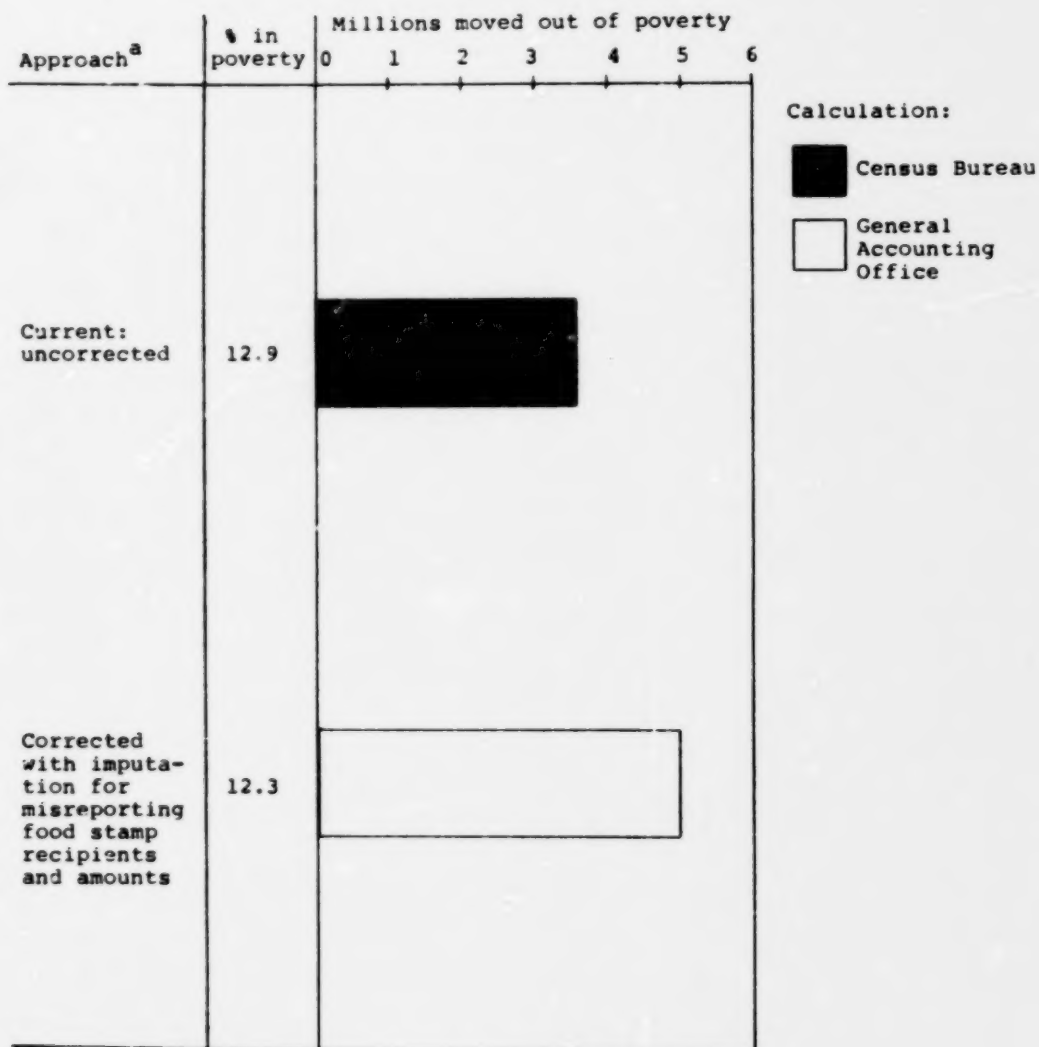
As figure 6 indicates on the preceding page, under the Bureau's market value method (which assigns the average Medicare and Medicaid value to those enrolled), the poverty rate is 10.8 percent in 1982, and about 2.4 million persons would be reported as moved out of poverty in the four states. Using alternative calculations for Medicare alone shows that the poverty rate would increase by between 0.5 and 0.9 percentage points. That is, between roughly 215,000 and 390,000 fewer persons would be reported as moved out of poverty in the four states. If this same change in the poverty rate were found at the national level, between roughly 1.0 and 1.8 million more persons would be reported as being in poverty when our adjustments to the market value approach are used.

Adjusting for the misreporting of food stamp reciprocity and amounts

The fourth technical issue examined addresses the concern that the Bureau's market value method for estimating poverty under an income definition including the value of food and housing benefits does not correct for misreporting food stamp reciprocity and amounts.

This misreporting involves an underestimate of benefits. The Bureau's proposed market value method uses CPS reports of the total value of food stamps received as the basis for cashing out this benefit. The Bureau also obtained an independent estimate of the value of food stamps distributed in 1982, through a technique that does not depend on respondent recall. The Bureau found that the CPS respondents reported only about 72 percent of

Figure 7: The Use of the Market Value Method With the Current and Corrected Approaches for Adjusting for the Misreporting of Food Stamp Recipients and Amounts: Percentage of Persons in Poverty and Millions Moved Out in 1984



^aIncome measure includes food and housing.

the value of the food stamps actually distributed but did not apply corrective procedures. We developed a correction for this underreporting that estimates the value of food stamps received by households who had not reported obtaining them. (A further explanation of this correction can be found in appendix III.)

As figure 7 shows on the preceding page, under an income definition including cash plus the Bureau's market value of all food and housing benefits, the poverty rate is 12.9 percent, and about 3.6 million persons nationally are moved out of poverty, relative to the official cash-only definition of income. Corrected for misreporting food stamp reciprocity and amounts, the poverty rate would further decline by 0.6 percentage points. That is, nearly 1.4 million additional persons would be shown as moved out of poverty nationally.

ARE SPECIFIC SUBGROUPS DIFFERENTIALLY AFFECTED BY THESE CONCEPTUAL AND TECHNICAL CHOICES?

To this point, we have focused on the effect that the conceptual and technical choices have on all persons in the population. In determining the importance of new, proposed poverty indicators, it is also necessary to consider the effect of the conceptual and technical choices made in measuring poverty on specific subgroups in the population, especially those who have historically been most affected by changes in welfare policy. For each of the conceptual and technical issues we examined, we also derived poverty estimates for these specific subgroups in the population reported in the Bureau publications on poverty.

In these analyses, we computed the changes in the poverty rates for each of the subgroups. For each of the conceptual issues, we computed changes in subgroup poverty rates relative to the official cash-only rates. For each of the technical issues, we computed changes in the subgroup poverty rates relative to the Bureau's proposed market value method poverty rate. When the subgroup changes in the poverty rates were at least two times the size of the average change for the population, we considered this evidence of a differential effect. This identifies subgroups that we believe would be very much more (or less) likely than others to be reported as no longer in poverty when the in-kind benefits are cashed out.

As indicated in figure 8, some subgroups of the population (for example, persons in families maintained by women) are notably affected by more than one of the conceptual and technical issues, and others (for example, persons in married couple families) are not. Given the fact that some of the subgroups displayed in figure 8 overlap, comparisons across subgroups should be made with caution. Further, with the exception of the correction for misreporting food stamp reciprocity and amounts, which affected all subgroups similarly, each of the conceptual

Figure 6: Change in Poverty Rates for Selected Conceptual and Technical Issues by Population Subgroups^a

SUBGROUP	CONCEPTUAL		TECHNICAL									
	Income measures		Nonsharability of benefits			Medical assignment		Medicare value imputation				
	Cash + market value for food and housing	Cash + market value for food, housing, and noninstitutional medical care	Nonsharable	Individual assignment	Prorated	Enrollee-enrollee	Recipient-recipient	Median	Trimmed mean, 50% of distribution	Trimmed mean, 80% of distribution	Random imputation	Correction for misreporting food stamp recipients and amounts
White												
Black	X	X	Y					Y	Y		Y	
Hispanic					Y	Y						
Younger than 18				Y	Y	Y						
Age 65 and over		X					Y	Y	Y	Y	Y	
Persons in married couple families												
Persons in households headed by women	X	X	Y	Y	Y	Y	Y					
Single males												
Single females		X					Y	Y	Y	Y	Y	
Average change: all cases	-1.5	-4.6	+0.2	+1.8	+0.8	+0.4	+0.7	+0.9	+0.8	+0.5	+0.5	-0.6

^a"X" = 2 or more times the average change from the official poverty rate; "Y" = 2 or more times the average change from the poverty rate using the current market value method.

and technical issues differentially affected at least one population subgroup, and some issues (for example, the nonsharability of medical benefits) differentially affected many subgroups.

SUMMARY

Our empirical analyses of the Bureau's proposed changes to the poverty indicators have shown, first, that selected conceptual choices such as what is included in the income definition and how noncash income components are valued can dramatically decrease the poverty rate, and, further, they have a substantial effect on the income distribution of the poor. We showed also that selected technical and methodological choices, such as the nonsharability of medical benefits, calculating and assigning medical benefit values using different groups, assigning the average medical expenditure to those who are eligible, and adjusting for misreporting food stamp reciprocity and amounts, associated with the Bureau's proposed methods for measuring poverty, have a smaller but important effect on poverty estimates.

The first three push the poverty rate upward. For example, taking into account the nonsharability of medical benefits reveals a higher poverty rate (up to 12.1 percent) than the Bureau's market value poverty rate of 10.3 percent. However, one factor we examined pushes it down. That is, the correction for misreporting food stamp reciprocity and amounts yields a poverty rate of 12.3 percent--the rate reported by the Bureau was 12.9 percent.

Finally, we showed that the elderly, blacks, Hispanics, children, persons in families maintained by women, and unrelated females are differentially affected by the conceptual issues involved in the Bureau's poverty measurement procedures and the technical issues associated with them.

The technical issues examined in this preliminary report are not, of course, the full array of those raised. In addition, alternatives other than those we tested could be examined. However, we believe these analyses illustrate that it is possible to test empirically what the effect of the technical issues may be and that it is valuable to have such information both for interpreting the results of the proposed methods for cashing out in-kind benefits and for making future decisions about which method should be used to represent poverty in the United States.

REQUEST LETTER

Congress of the United States
House of Representatives
Washington, D.C. 20515

March 18, 1985

Honorable Charles A. Bowsher
Comptroller General
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Bowsher:

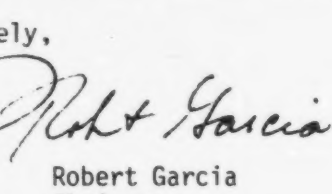
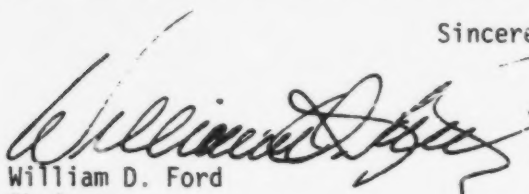
During the past year, the House Subcommittee on Census and Population has devoted considerable attention to monitoring the Census Bureau's review and re-evaluation of the poverty index. Following hearings conducted last year, an issue of emerging concern was the evaluation methods by which proposed changes to the poverty indicator would be assessed. To address this concern, the Subcommittee asked the General Accounting Office's Program Evaluation and Methodology Division to conduct a study to:

- examine methods that have been applied in the past to assessing changes in poverty indicators and thresholds;
- develop and test an evaluation methodology appropriate for assessing future changes, i.e., a methodology that will be applicable for assessing cross-cutting effects in health, welfare, agriculture, housing and other programs which would be affected by changes in poverty indicators and thresholds;
- analyze, in depth, the technical aspects of alternative ways of valuing non-cash benefits, particularly health benefits, including those proposed in the "Smeeding formulas"; and
- identify what is important, in reviewing proposed new indicators to assure a full, fair, adequate evaluation of changes proposed; that is, specify the questions that should be asked of those proposing new indicators and about the evidence presented for these new indicators and thresholds.

Honorable Charles A. Bowsher
March 18, 1985
Page 2

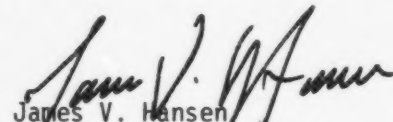
The subcommittee, under Congressman Garcia's tenure has demonstrated a continued interest in the analysis that is currently being conducted by the Program Evaluation and Methodology Division. It would, therefore, be helpful to have a briefing on your work to date, and to receive the findings of your full review as soon as possible. If you have any questions, please call Lillian Fernandez, subcommittee staff director, on 225-6295.

Sincerely,



William D. Ford
Chairman
Committee on Post Office
and Civil Service

Robert Garcia
Chairman
Subcommittee on Census and
Population



James V. Hansen
Ranking Minority Member
Subcommittee on Census and
Population

RG/WF/JH/mm1

BUREAU OF THE CENSUS EXPLANATION
OF THE MARKET VALUE, RECIPIENT VALUE,
AND POVERTY BUDGET SHARE METHODS

Market Value

The market value (MV) of an in-kind transfer is equal to the private market value of the benefits received by the individual. In the case of food stamps, the market value is directly measurable as the dollar value of food coupons. In other cases, MV is not so easily determined.

The market values of Medicaid and Medicare benefits were estimated by dividing total medical benefits paid by the programs by the number of noninstitutionalized persons covered. The calculations were carried out after persons were placed in various risk categories. For Medicare, the risk classes were (1) age 65 and over and (2) blind and disabled. For Medicaid, the risk classes were (1) age 65 and over, (2) blind and disabled, (3) age 21 to 64, nondisabled, and (4) age less than 21, nondisabled. The market value assigned varied by risk class, state of residence, and whether, in the calculation of mean expenditures per covered person, the value of benefits going to institutionalized persons was included with the value of benefits going to those not in institutions. In the calculation of mean expenditures per covered person, the denominator was the number of covered noninstitutionalized persons even when the numerator was based on expenditures for both noninstitutional and institutional persons. For example, including the value of benefits going to the institutionalized, the market value of Medicaid benefits in 1984 was estimated to be \$8,921 for a person 65 and over living in New York. If the benefits going to the institutionalized were not counted, the estimated market value dropped to \$2,789. For nondisabled persons under 21 living in New York, the estimated market value of Medicaid was \$610 when benefits going to the institutionalized were included and \$580 when they were not included.

In the case of public housing, the conceptual measure of MV was defined as the difference between the private market rental value of the unit and the rent paid by the tenants. Estimating MV for public housing is difficult because the private market rental value of public housing units is not available directly from surveys or other sources. Complex statistical procedures were used to link data from the Annual Housing Survey and the March CPS in order to arrive at estimates of MV for this benefit.

Recipient or Cash Equivalent Value

The receipt of noncash benefits may distort consumption patterns and, therefore, add less to a recipient's economic well-being than an equal dollar value cash transfer. If so, the benefits

should be discounted from their market value to their recipient value to reflect this lower value. Recipient value (RV) theoretically reflects the program beneficiary's own valuation of the benefit. Theoretically, it would be measured by the amount of cash that would make the recipient feel just as well off as the noncash benefit. Many economists feel that cash equivalent value is the proper measure for valuing noncash benefits to evaluate their effect on the economic well-being of the poor, but not all economists are in full agreement on this issue.

In theory, the recipient or cash equivalent value can be estimated by assigning a utility function¹ to all recipients. The cash equivalent measure is the amount of cash transfer that leaves the recipient at the same level of well-being or utility as the noncash transfers. Accurate estimates of cash equivalent value require knowledge of all recipients' differing utility functions and the prices they pay. Because utility functions cannot be observed and measured with a high degree of accuracy, and because of difficulties with current consumption data, a simplified measure of recipient value was developed as a substitute.

The cash equivalent value estimates in this study are based on household survey data that allow the calculation of normal (average) expenditures at different income levels. These estimates were derived by assuming that the cash equivalent value of a noncash benefit is equal to the normal expenditure on that good or service by unsubsidized consumers with similar characteristics (e.g., income size, location, and age). Calculating cash equivalent value in this manner implicitly assumes that there is no difference between the comparable family and the recipient family. However, if both units are eligible for a given benefit and only one actually participates in the program while the other (the comparison unit) does not, it may be incorrect to infer that the expenditures for the given good by the nonparticipant are equivalent to those of the participant if there was no program. This may result in selectivity bias, one of the limitations of the cash equivalent value approach.

If the recipient normally spends less than the MV of the noncash benefit on the subsidized good or service, the noncash benefit will cause a change in the expenditure pattern. This means that the noncash benefit is worth less to the individual than an equal amount of cash that would not lead to a change in spending habits. If the MV of the benefit exceeds the normal

¹A utility function is an economic construct that indicates consumer's relative preferences for various goods and services depending on how consumers substitute these goods and services for one another.

Source: U.S. Bureau of the Census, Estimates of Poverty Including the Value of Noncash Benefits--1984, technical paper 55 (Washington, D.C.: U.S. Government Printing Office, 1985), pp. 2-4.

expenditure level, RV can be approximated by the level of normal expenditures. If normal expenditures exceed the MV of the benefit, RV is equal to MV. That is, because the noncash benefit recipient would normally spend at least as much as the MV on the good, it would not alter the normal expenditure pattern.

The estimates of RV's were based on data from several sources. The normal expenditures for food were computed using diary data from the 1980, 1981, and 1982 Consumer Expenditure Surveys. Those for public housing were based on the complex linkage of March CPS and Annual Housing Survey data for 1979 and 1981. The data used to compute the RV's for medical benefits are especially weak. They were derived from the 1972-1973 Consumer Expenditure Survey and required the inclusion of persons covered by Medicare and employer-provided health insurance. More details on these problems can be found in appendix B and Technical Paper 50.

Poverty Budget Share Value

The third valuation method examined in this study was poverty budget share (PBS). The PBS approach is a different type of valuation technique that links the value of noncash benefits directly to the current concept of poverty. PBS is not strictly a measure of the value of noncash benefits, but rather, it is a method for dealing with such benefits in the determination of a person's poverty status. The poverty thresholds can be thought

of as the amount of money which, if spent wisely, will be sufficient to meet the basic needs of a family or single person. The approach places a limit on the value of specific benefits that is equal to the amount spent on the specific good or service by unsubsidized families and single persons at the poverty level. For example, if a person participates in the Medicaid program, then PBS assumes that the value of those benefits cannot be more than the amount spent on medical care by people near the poverty level who were not receiving medical care benefits. This assumption presumes that recipients cannot use "extra" amounts of one noncash benefit to meet their basic needs for other types of goods and services. To assign values larger than PBS to a particular benefit requires the assumption that recipients can make such substitutions to a significant extent.

Derivation of PBS values were based on data from the Annual Housing Survey and the 1960-61 Consumer Expenditure Survey. Because the poverty levels were developed assuming one-third of income is spent on food, the PBS value limits on food were set at one-third of the poverty levels. The PBS value limits for housing were obtained from the Annual Housing Surveys for 1979 and 1981 by computing the average proportions of income spent on housing by families with incomes near the poverty level not residing in public housing. Values for medical benefits were estimated based on the 1960-61 Consumer Expenditure Survey. Poverty levels were multiplied by the proportions of income spent on medical care during the 1960-61 period to arrive at the PBS limits.

TECHNICAL DESCRIPTION OF ALTERNATIVE
COMPUTATIONS FOR EACH ISSUE

CONCEPTUAL ISSUES

1. What to include in the income definition

Issue: The official poverty indicator is based on an income definition that includes only cash income. Given the substantial increases in noncash assistance provided to the poor, experts in poverty measurement have suggested that the income definition be expanded to include the value of noncash benefits that the poor receive.

GAO Procedure: Much of the information we provide on the effect of alternative income definitions on poverty indicators comes from the Bureau's publication series on poverty estimates. In figure 1, of the 15 alternative poverty rates we display, 9 are included in the Bureau's poverty estimates publication, and the remaining 6 were calculated by GAO. We replicated and verified the Bureau's poverty estimates for (1) cash plus the market value, recipient value, and poverty budget share value for all food and housing benefits (which yields 3 estimates), (2) cash plus the market value, recipient value, and poverty budget share value for all food, housing, and noninstitutionalized medical care (which yields 3 estimates), and (3) cash plus the market value, recipient value, and poverty budget share value of all food, housing, and medical benefits (which yields 3 estimates, for a total of 9 estimates). In addition, we derived poverty estimates for (1) cash plus the market value, recipient value, and poverty budget share value for food stamps only (which yielded 3 estimates) and (2) cash plus the market value, recipient value, and poverty budget share value for food stamps and school lunches (which yielded 3 estimates, for a total of 6 new estimates), using data from the 1985 annual March supplement to CPS and following the Bureau's poverty measurement procedures.

2. How noncash components of income are valued

Issue: Some analysts believe that the market value method developed by the Bureau overvalues benefits relative to their "real" value to the recipient. While the use of an insurance concept (that is, the estimated cost of adequate benefit coverage in the private market) versus the value to the recipient is in part not an empirical matter, there is an empirical question of what differences actually result from using alternative valuation methods.

GAO Procedure: Our examination of this issue involved re-examining the Bureau's procedures for calculating the market values for food stamps, school lunches, housing, and medical care benefits and examining the effect adding these values to cash

income has on the distribution of incomes of the poor and the amount of money necessary to raise a family in poverty up to the poverty line (the "poverty gap"). Again, using the 1985 CPS, we examined the effect that adding the market value for various noncash benefit combinations has on the distribution of incomes of the poor relative to the two other valuation methods. That is, we developed a technique that displays the effects of the valuation methods on income distributions using poverty gaps.

TECHNICAL ISSUES

In order to place our analyses of the selected technical issues in a meaningful context, we provide next a brief description of the Bureau's market value method for calculating benefit values for food stamps and medical care.

The market value has been defined by the Bureau as the price of the goods or service provided for by the noncash benefit. The benefits of a four-person family with cash income of \$6,000 in 1984 and receiving an annual face value of \$1,500 in food stamps would be assigned \$1,500 as a market value. This value would be assigned because the food stamps purchase that amount of goods--in this case, food. The total income of the family would then be \$7,500.

The Bureau's current method for including medical benefits by the market value method (excluding benefits for the institutionalized) proceeds as follows.

Step 1: The Bureau obtains estimates of average benefits paid by Medicare and Medicaid from HCFA. The Medicare value is computed by dividing total Medicare benefits paid by the number of Medicare enrollees separately for each state and Medicare risk group (risk groups are the aged and the blind and disabled). This estimate is reduced by approximately 2 percent to exclude Medicare expenditures for the institutionalized. The Bureau then assumes that all persons covered by Medicare obtain Supplemental Medical Insurance (SMI) and so deducts the SMI premium from the Medicare value.

The Medicaid value is computed by dividing total Medicaid benefits paid for the noninstitutionalized by the number of noninstitutionalized Medicaid recipients. This calculation is done separately for each state and Medicaid risk group (risk groups are the aged, the blind and disabled, age 21-65 nondisabled, age younger than 21 nondisabled).

Step 2: Cases in CPS noted as being covered by Medicare or Medicaid or both are assigned to risk groups, and the Medicare and Medicaid values obtained in step 1 are assigned to these cases. If a person is covered by both Medicare and Medicaid, the amount of the SMI premium is added to the Medicaid value, to account for SMI premiums paid on behalf of Medicare beneficiaries by Medicaid.

Step 3: Each individual's medical value is computed by adding his or her Medicare and Medicaid values.

Step 4: The Bureau's procedure then sums the individual medical values of all family members and adds this sum to family income (including food and housing benefits) in the poverty calculation. Each individual is judged to be in or out of poverty in a comparison of the total family income to the poverty threshold for a family of its size.

The analyses we performed for each of the selected technical issues are discussed below.

1. Nonsharability of medical benefits

Issue: The market value method for including medical benefits in income sums the Medicare and Medicaid values of all family members and adds this value to sharable family income (that is, cash and food and housing benefits). Each individual is judged to be in or out of poverty in a comparison of this total family income to the poverty threshold for a family of its size.

Note, however, that in the addition of the sum of the medical benefits of all family members to income, some individuals may be moved out of poverty by benefits they cannot share. For example, a grandmother who is covered by Medicare cannot share these benefits with other family members in her household (such as her son, daughter-in-law, or grandchild), but by the current method, her medical benefit may move all the family members out of poverty.

GAO Procedure: We developed three methods to estimate the number of people moved out of poverty by nonsharable medical benefits: nonsharable lower bound method, individual assignment method, and prorated method.

--Nonsharable lower bound method. This method uses the same general procedure as the Bureau's proposed market value method, except that persons who were not covered by either Medicare or Medicaid were not moved out of poverty by the inclusion of medical benefits. This procedure adjusts for persons with no medical coverage who are moved out of poverty by the inclusion of medical benefits of other family members but does not adjust for individuals with small medical values who are moved out of poverty by the large medical benefits of other family members. As such, it represents a "lower bound" on the number of people affected by nonsharable medical benefits.

--Individual assignment method. For a more inclusive alternative, we used the individual assignment method. In this method, we added each individual's medical benefit separately to sharable family income and compared this value to the family's poverty threshold. Individuals with

large medical benefits would have a greater likelihood of being moved out of poverty than individuals with small medical values.

For example, consider a family consisting of a grandmother receiving \$2,000 in cash income and \$2,000 in Medicare benefits; her daughter, who receives \$4,000 in cash income and \$700 in Medicaid benefits; and her grandchild, who receives no cash income and \$300 in Medicaid benefits. Assume further that the poverty threshold for a family of three with an elderly member is \$7,500. Under the Bureau's proposed market value method, \$9,000 would be assigned to all members of the family for comparison with the poverty threshold, and all three family members would be treated as being out of poverty. The individual assignment method takes the total family cash income of \$6,000 and, for each member of the family, adds to it his or her medical benefits. In this case, the grandmother would be assigned a new total income of \$8,000, the daughter would be assigned a total income of \$6,700, and the grandchild would be assigned a total income of \$6,300. These incomes would then be compared to the poverty threshold for a family of three, one of whom is elderly.

In this case, only the grandmother would be classified as out of poverty.

Note that this method mixes levels of aggregation. Individual medical values are added to family income and comparison is made to family thresholds. In an attempt to address this inconsistency, we also used another method, the prorated method.

- Prorated method. In this method, all values are on an individual level. Each individual's income was obtained by dividing the family's sharable income equally among the family members and adding to this amount the individual's medical benefit. In determining individual-level thresholds, we first obtained each individual's share of the nonmedical component of the family threshold by: obtaining an estimate of the medical component of the family threshold by multiplying the poverty budget share proportion for medical benefits by the family threshold (the poverty budget share proportion for medical benefits gives the proportion of income spent on these benefits by persons around the poverty line); subtracting the medical component from the family threshold; and dividing the remaining amount equally among the family members. To each individual's share of the nonmedical component of the family threshold we added an estimate of how much an individual around the poverty line normally spends on medical expenses (obtained by multiplying the poverty budget share proportion for medical expenses for a single person by the threshold for a single person). We determined

poverty status by comparing the individual-level income to the individual-level threshold.

For example, in the family described above, the prorated method would add to each individual's part of the sharable family income (\$6,000 divided by 3, or \$2,000) each individual's medical benefits. Hence, the grandmother would have a total income of \$4,000, the daughter's would be \$2,700, and the grandchild's total income for poverty classification purposes would be \$2,300. These incomes would then be compared to a new poverty threshold calculated for each individual.

2. Calculation and assignment of medical benefit amounts

Issue: The Bureau's market value method for calculating and assigning the value of medical benefits is not consistent. Values for Medicare are calculated on the basis of administrative data on the number of Medicare enrollees, and the values are assigned to Medicare enrollees in CPS, but values for Medicaid are calculated on the basis of administrative data on Medicaid recipients and are assigned to Medicaid enrollees in CPS.

GAO Procedure: We obtained data from HCFA on 1982 Medicare and Medicaid rates of reciprocity in four states (California, Georgia, Michigan, and Tennessee). Using this information, we recalculated the medical imputation in two ways, so the calculation and assignment of values would be consistent: one used only enrollees, and the other used only recipients. Table III.1 summarizes the imputation approaches.

Table III.1: Methods for Calculating and Assigning Medicare and Medicaid Values

	<u>Market value</u>	<u>Methods</u>	
		<u>Use only enrollees</u>	<u>Use only recipients</u>
Calculation of Medicare value based on	Enrollees	Enrollees	Recipients
Medicare value assigned to	Enrollees	Enrollees	Recipients
Calculation of Medicaid value based on	Recipients	Enrollees	Recipients
Medicaid value assigned to	Enrollees	Enrollees	Recipients

- Use only enrollees. In this approach, we based a calculation and assignment of Medicare values on enrollees, as is currently done. However, using the Medicaid recipient rates that we obtained from HCFA, we recalculated Medicaid values on the basis of the number of enrollees rather than on recipients, as is currently done, and assigned these values to enrollees identified in CPS.
- Use only recipients. In this approach, using HCFA administrative data on Medicare recipient rates, we recalculated the Medicare values on the basis of the number of recipients rather than on enrollees, as is currently done. We used the Medicaid values based on recipients that are used in the current method. We then assigned these values to a subset of the cases identified in CPS as enrolled persons. Persons enrolled in Medicare or Medicaid who did not receive a medical benefit cannot be identified in CPS. Therefore, nonreciprocity was assigned on a random basis as follows. For each state and risk group, we computed the Medicare and Medicaid recipient rates from the HCFA data. We then determined the number of weighted CPS cases necessary to produce these rates and assigned CPS cases as Medicare and Medicaid nonrecipients on a random basis.

In each approach, after assigning the Medicare and Medicaid values to individuals, we followed the Bureau's procedures by summing the individual medical values over the entire family and adding this value to family income (including food and housing benefits) in the poverty calculation.

Note that in recalculating and assigning medical values in these approaches, we calculated 1984 poverty rates by using 1982 data on Medicare and Medicaid recipient rates. The procedure thus assumes that 1982 recipient rates held in 1984. If 1984 recipient rates were higher than the 1982 rates, poverty estimates using these approaches would be closer to those obtained by the Bureau's current methods; if the rates were lower, poverty estimates would be farther from those obtained by using the Bureau's proposed methods.

3. Assigning the average medical expenditure

Issue: The Bureau's market value method obtains the values to assign to those covered by Medicare or Medicaid or both by calculating mean expenditures. Specifically, it obtains Medicare values by dividing an estimate of total Medicare reimbursements by the total number of persons enrolled in the program (Supplemental Medical Insurance premiums are also subsequently deducted). Note, however, that the distribution of Medicare reimbursements is severely skewed. A small proportion of the enrolled population

Table III.2: Individual-Level Distribution of Medicare Reimbursements to California Aged in 1982

Reimbursement category	Persons		Amount reimbursed	
	Number	Percent	\$	Percent
0	867,791	33.5	0	0
1-99	316,480	12.2	15,348,000	0.3
100-299	411,520	15.9	77,152,000	1.6
300-499	197,760	7.6	76,676,000	1.6
500-999	196,520	7.6	138,074,000	2.9
1,000-1,499	81,500	3.1	99,811,000	2.1
1,500-1,999	54,280	2.1	94,546,000	2.0
2,000-2,999	86,000	3.3	214,357,000	4.5
3,000-4,999	119,900	4.6	468,394,000	9.7
5,000-7,499	78,340	3.0	480,859,000	10.0
7,500-9,999	51,620	2.0	447,245,000	9.3
10,000-14,999	57,160	2.2	696,199,000	14.5
15,000+	75,060	2.9	2,003,932,000	41.6
Total	2,593,931	100.0	4,812,593,000	100.1

Source: Health Care Finance Administration, Medicare Program Statistics (Washington, D.C.: U.S. Government Printing Office, 1984).

receives a large proportion of the total amount reimbursed. For example, as table III.2 shows, in California in 1982, about 5 percent of the aged population covered by Medicare received approximately 56 percent of the total payments for the aged. The value of the mean can be severely affected by the presence of these few cases with very large reimbursements. Therefore, other computational procedures may produce substantially different values to assign to those covered by Medicare.

GAO Procedure: We obtained distributions of 1982 Medicare enrollments and reimbursements in four states (California, Georgia, Michigan, and Tennessee) for aged and disabled risk groups from HCFA. We used five procedures to assign values from these distributions to individuals identified on the CPS as covered by Medicare: mean, median, trimmed mean using the middle 50 percent of the distribution, trimmed mean using the middle 80 percent of the distribution and random assignment.

--Mean. This procedure parallels the Bureau's market value method. Within each state and risk group category, we computed the mean reimbursement per enrollee for the year and assigned these values (minus SMI premiums) to those identified as covered by Medicare. The values we used were not exactly the same as the values used by the Bureau

in 1982 (our value was 1.3 percent smaller). The differences reflect the lag in Medicare bill processing. The Bureau must use estimates of reimbursements that are available when it is producing its poverty statistics and, therefore, had to estimate payments that had not been processed. The 1982 reimbursement distributions we obtained were published in 1984 and are the official HCFA program statistics. In addition, our estimate did not remove the small Medicare reimbursements for the institutionalized.

- Median. We computed the median reimbursement per enrollee for each state and risk group category and assigned these values (minus SMI premiums) to those covered by Medicare in CPS.
- Trimmed mean using the middle 50 percent of the distribution. We removed the 25 percent of the cases with the largest reimbursements and the 25 percent with the smallest reimbursements and then computed the mean reimbursement for the remaining 50 percent of the cases. We calculated these trimmed means for each state and risk group category and assigned the values (minus SMI premiums) to those covered by Medicare in CPS.
- Trimmed mean using the middle 80 percent of the distribution. This procedure is the same as the one above, except that we trimmed out the top and bottom 10 percent of the cases and computed the mean reimbursement on the remaining 80 percent of the cases.
- Random assignment. We assigned Medicare values on a random basis so that our imputed distributions would match HCFA's reimbursement distributions. HCFA's reimbursement distributions give the number of persons who received Medicare reimbursement in 1982 in various ranges (for example, \$100-\$299) and the total amount paid to the people with reimbursements in the range. For each state and risk group, we computed the proportion of Medicare enrollees who received reimbursements in each range and the average reimbursement in the range. We determined the number of weighted CPS cases that would be necessary to reproduce the proportions in each of HCFA's reimbursement categories. We then randomly assigned CPS cases covered by Medicare to the reimbursement categories and gave the category mean (minus SMI premiums) as their value for Medicare.

In each procedure, we assigned the same Medicaid values as those used by the Bureau in the 1982 calculations, so our different procedures simply reflect changes in the way the value of Medicare is calculated. After assigning the Medicare and Medicaid values to individuals, we followed

the Bureau's procedures by summing individual medical values over an entire family and adding this value to family income (including the values for food and housing benefits) in the poverty calculation.

4. Food stamp misreporting

Issue: Misreporting food stamp reciprocity or amounts or both is recognized as a problem in CPS. Respondents to the annual March supplement of CPS are asked to report food stamp receipt and amounts for the previous calendar year. But although the Bureau allocates values for CPS respondents who did not answer the question on food stamps (item nonresponse), it does not impute values to correct for misreporting. The Bureau has indicated that the total value of food stamps reported by CPS respondents accounts for only about 72 percent of the independent estimate from ISDP. This is partly because of the passage of time and imperfect recall.

The total dollar shortfall indicated above may derive from misreporting of reciprocity or amounts received or both. USDA projects a figure of roughly 35 million food stamp recipients annually, based on USDA's monthly administrative figure and on a 1979 longitudinal survey, which provides data on the annual-to-monthly participation ratio. These figures greatly exceed the CPS estimate, which is about 20-21 million annually. (The longitudinal survey is the Income Survey Development Program, in which interviews with respondents were repeated every 3 months, including questions about food stamp participation in the previous 3 months.)

GAO Procedure: Using USDA's projection approach, we calculated a 1984 projection for food stamp recipients (35.7 million) and further estimated the numbers receiving food stamps for 1-3 months, 4-6 months, 7-11 months, and 12 months in 1984. As table III.3 shows, this analysis revealed that the shortfalls in CPS reporting were severe-to-moderate for part-year recipients (the

Table III.3: Estimates of the Number of Persons Receiving Food Stamps by Duration of Receipt in 1984

Source of estimate	Millions of persons receiving food stamps				Total
	1-3 months	4-6 months	7-11 months	12 months	
USDA/ISDP ^a	9.8	4.9	9.1	11.9	35.7
CPS ^b	2.8	2.6	2.2	12.5	20.1

^aU.S. Department Agriculture and 1979 longitudinal survey of the Income Survey Development Program.

^bCurrent Population Survey.

first three groups). We theorized that such persons might no longer be receiving food stamps and might therefore have forgotten or neglected to report any receipt. By contrast, there may be a relatively small excess amount for the 12-month duration group; it seemed likely that such persons might have received food stamps for the majority of the previous calendar year and were perhaps still receiving them and so "rounded off" their report to full-year receipt.

Our imputation procedures were designed to insure that (1) the resulting total number of recipients would match projections based on USDA monthly data and the ISDP monthly-annual participation ratio, (2) the distribution of the duration of food stamp receipt would match reports from ISDP, (3) "imputee" households would be assigned food stamp dollar values from the full distribution of similar households who reported food stamp receipt, and (4) the "imputee" households would be similar to reporting households in terms of their poverty status and household size.

Specifically, our first step was to select a sample of "imputee" households from among CPS households that reported no receipt of food stamps during 1984. The size of this sample was determined by our estimate of the shortfall. The sample was randomly selected in a way such that the selected "imputee" households would resemble households that reported food stamp receipt in terms of poverty status and household size--that is, the sample was selected with stratification on poverty status and household size. Our second step was to randomly assign "imputee" households to the three part-year monthly duration groups, according to the shortfall calculated for each group. The third step--accomplished separately for each duration group--was to identify "donor" households that had reported food stamp receipt, so that individual household reports of the dollar value of food stamps received could be assigned to similar "imputee" households. Rather than assign cell means, we gave each donor household's individual food stamp value an equal chance of being assigned to each similar household. In this way, the distribution of food stamp values was preserved, and possible distortions from the use of cell means were avoided.

Similar procedures were used to select a much smaller sample of households reporting 12-month food stamp receipt and to assign these households new dollar values from the distribution of households reporting 7-11 months of food stamp receipt. Having completed these imputation procedures, we tallied the total dollar values that had been reported and imputed for food stamps. Comparing this total dollar value to USDA administrative totals for food stamps issued, we found that 100.8 percent of the total dollar value had been accounted for. Therefore, we did not make further adjustments. Specifically, we concluded that there was no need to change the dollar values (amounts) assigned to (or reported by) individual households. Finally, for "imputee" households containing more than one family, we prorated the assigned dollar

values according to the size of the component subfamilies. Family incomes reflecting the food stamp imputations could then be determined and new poverty rates calculated.

(973590)

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.